



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPELLANT: Robert BOESNECKER CONF NO.: 8899
SERIAL NO.: 10/030,870 ART UNIT: 2615
FILED: October 19, 2001 EXAMINER: Devona E. FAULK
TITLE: FLAT SURFACE LOUDSPEAKER AND METHOD
FOR OPERATING THE SAME

APPELLANT'S BRIEF ON APPEAL UNDER 37 C.F.R. §41.37

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Sir:

In accordance with the provisions of 37 C.F.R. § 41.37, Appellant submits the following:

I. REAL PARTY IN INTEREST:

The real party in interest is Siemens Aktiengesellschaft.

II. RELATED APPEALS AND INTERFERENCES

No related appeals or interferences are known.

III. EVIDENCE SUBMITTED UNDER 37 CFR §§ 1.130, 1.131, OR 1.132

None.

IV. DECISIONS RENDERED BY THE COURT OR THE BOARD IN RELATED APPEALS AND INTERFERENCES SECTION

None.

V. STATUS OF CLAIMS:

Claims 1-6, 8 and 10 stand finally rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over EP 0 567 061 to Makivirta et al. (hereinafter "Makivirta") in view of U.S. Patent No. 6,198,831 to Azima et al. (hereinafter "Azima").¹

Claims 7, 9, 11 and 12 stand finally rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Makivirta, Azima and further in view of GB 2 265 519 to Smith (hereinafter "Smith").²

¹ U.S. Pat. & Trademark Office, Final Office Action, pp. 4-7, Appl. Ser. No. 10/030,870 (May 14, 2007).

² Id. at 7-8.

Claims 1-12 are being appealed.

VI. STATUS OF AMENDMENTS:

Appellant's Amendment filed February 15, 2007 has been entered and considered.³

VII. SUMMARY OF CLAIMED SUBJECT MATTER:

A. CONCISE EXPLANATION OF THE SUBJECT MATTER SET FORTH IN EACH INDEPENDENT CLAIM ARGUED SEPARATELY.

1. An explanation of the subject matter set forth in each independent claim argued separately referring to the specification and/or the drawings by reference characters in accordance with 37 C.F.R. § 41.37(c)(1)(v). Where appropriate, numbers refer to reference characters in the figures.

Claim 1 is directed to a method for operating of a flat surface loudspeaker (1), in which at least one oscillating coil (3, 4) is mounted on a surface (2).⁴ The at least one oscillating coil (3, 4) is mounted on the surface (2) in the form of a plate having predetermined material characteristics.⁵ In performing the method of claim 1, at least one coil (3, 4) is stimulated to oscillate electrically by a sound source (not shown) and sound is emitted by the mechanically oscillating surface (2).⁶

In a measuring mode, the acoustic frequency response of the flat surface loudspeaker is measured,⁷ and a frequency curve is determined

³ Id. at 2.

⁴ Appellant's Substitute Specification (hereinafter Sub. Spec.), pgh. 26, ll. 1-3.

⁵ Id. at pgh. 26, ll. 1-2, pgh. 27, ll. 1-7.

⁶ Id. at pgh. 26, ll. 3-8.

⁷ Id. at pgh. 30, ll. 1-4.

based on the measured acoustic frequency response.⁸ An inverse of the measured frequency curve is determined,⁹ and the inverse frequency curve is simulated in a filter device (8) as a transfer function of the filter device (8).¹⁰

In an operating mode, the frequency response of the flat surface loudspeaker (1) is compensated for by the filter device (8) based upon the transfer function.¹¹ The filter device (8) is connected between the sound source and the flat surface loudspeaker (1).

Claim 4 is directed to a flat surface loudspeaker device. The flat surface loud speaker device includes a flat surface loudspeaker (1) having at least one oscillating coil (3, 4).¹² The at least one oscillating coil (3, 4) is mounted on a surface (2) in the form of a plate having predetermined material characteristics.¹³ The predetermined material characteristics, when stimulated by electrical sound signals, cause the surface (2) to oscillate.¹⁴ The oscillations of the surface cause sound emission.¹⁵ The flat surface loudspeaker device further includes a filter device (8) for the sound signals.¹⁶ The filter device (8) is connected upstream of the at least one

⁸ Id. at ll. 4-9.

⁹ Id.

¹⁰ Id. at pgh. 31, ll. 6-11.

¹¹ Id. at pgh. 30, ll. 7-9.

¹² Sub. Spec., pgh. 26, ll. 1-3.

¹³ Id. at pgh. 26, ll. 1-2, pgh. 27, ll. 1-7.

¹⁴ Id. at pgh. 26, ll. 3-8.

¹⁵ Id.

¹⁶ Id. at pghs. 31-32.

oscillating coil (3, 4).¹⁷ The filter device (8) has a transfer function that is the inverse of a frequency response of the flat surface loudspeaker (1).¹⁸

2. A more general discussion of the subject matter described in the specification to assist the Board in understanding example embodiments described in the present application.

In the field of electro-acoustics, the effects of the influencing variables governing the transmission quality of an electro-acoustic transducer often counteract one another.¹⁹ A physical/mechanical solution in which each of these influencing variables are optimized in the same way did not exist in the prior art prior to Appellant's invention.²⁰ In fact, given the state of the art, such an optimization was previously impossible.²¹ Consequently, at the time of Appellant's invention, each electro-acoustic transducer was invariably a compromise solution, due to systematic factors.²² One relevant example of this is the known loudspeaker box, with a number of individual, specifically designed loudspeakers.²³

Example embodiments are based on the joint idea that compromises (such as those discussed above) characterized by physical measures do not provide satisfactory results in a flat surface loudspeaker.²⁴ In some cases,

¹⁷ Id. at pghs. 31-32, FIG. 2.

¹⁸ Id. at pgh. 31, ll. 6-8.

¹⁹ Id. at pgh. 16.

²⁰ Id.

²¹ Id.

²² Id.

²³ Id.

²⁴ Id. at pgh. 17.

this is because a flat surface loudspeaker is actually not composed of individual, specifically designed loud speaker units.²⁵ With this in mind, example embodiments depart from conventional electro-acoustic ideas and adopt a different approach.²⁶

The electro-acoustic characteristics of flat surface loudspeakers are governed by the total effect of the characteristics of the oscillating coil or coils used, and by the mechanical characteristics of the sound-emitting surface that is used.²⁷ The electro-acoustic transfer function for each arrangement of a flat surface loudspeaker defined in this way is thus defined in the form of its frequency response, apart from tolerances.²⁸

Appellant determined that if the frequency curve corresponding to the transfer function is determined through measurement, then the frequency response of the flat surface loudspeaker can be compensated for, and hence linearized, by a filter device if the transfer function of the filter device is the inverse of the corresponding function for the combination of an oscillating coil or coils and the sound-emitting surface.²⁹

Appellant further determined that such a filter device be arranged between the sound source and the amplifier located upstream of the

²⁵ Id.

²⁶ Id. at pgh. 18.

²⁷ Id.

²⁸ Id.

²⁹ Id.

oscillating coil or oscillating coils in an operating arrangement to achieve the desired result.³⁰

The transfer function of the filter device is simulated by digital filters, in particular by means of Finite Impulse Response (FIR) filters, whose filter coefficients are derived from the inverse frequency curve of the flat surface loudspeaker.³¹ The filter device may include a sample and hold element as the input element, which is connected via an analog-to-digital converter to the digital filter, whose output is connected to a digital-to-analog converter.³²

The methods and devices described in connection with example embodiments overcome obstructions to the widespread use of flat surface loudspeakers in the prior art.³³ That is, namely, by utilizing example embodiments, one is able to maintain sound quality, regardless of the shape and material selected for sound-emitting surfaces of flat panel loudspeakers.³⁴ Even high-fidelity (hi-fi) requirements may be completely satisfied.³⁵

³⁰ Id.

³¹ Id. at pgh. 19.

³² Id.

³³ Id. at pgh 23.

³⁴ Id.

³⁵ Id.

VIII. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL:

Appellant seeks the Board's review of the rejection of claims 1-6, 8 and 10 under 35 U.S.C. § 103(a) as unpatentable over EP 0 567 061 to Makivirta et al. (hereinafter "Makivirta") in view of U.S. Patent No. 6,198,831 to Azima et al. (hereinafter "Azima").

Appellant also seeks the Board's review of the rejection of claims 7, 9, 11 and 12 stand finally rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Makivirta, Azima and further in view of GB 2 265 519 to Smith (hereinafter "Smith").

Claims 1-12 are being appealed.

Claims 1-12 rise and fall together.

IX. ARGUMENTS:

Rejection of claims 1-6, 8 and 10 over EP 0 567 061 to Makivirta in view of Azima.

A. CHANGING THE DESIGNATION OF REFERENCES DOES NOT MAKE-UP FOR LACK OF REASON TO COMBINE.

The Examiner argues that the Pre-Appeal Conference Decision (dated August 8, 2006) states only that the previous rejection in view of Azima and Makivirta, and that it was the suggestion of the Pre-Appeal Brief Review Conference Attendees that the Examiner use the same references, but reverse the order.³⁶ As argued during prosecution, however, a mere

³⁶ Id.

reversal in the designation of the references still does not make up for the lack of reason to combine.³⁷

Even in the previous rejection, a person having ordinary skill in the relevant art (herein "PHOSITA") would consider both disclosures in their entirety, regardless of which was considered by the Examiner as the primary reference. As Appellant has previously and persuasively shown **(and the Pre-Appeal Brief Review Board agreed)**, a PHOSITA would not have had sufficient reason to combine Mäkivirta and Azima to arrive at the method of claim 1, for example; regardless of which reference is designated as the primary reference and which is designated as the secondary reference.

B. EVEN IF COMBINED, AZIMA AND MÄKIVIRTA FAIL TO RENDER CLAIM 1 OBVIOUS.

1. The Examiner relies upon Azima to teach more than merely a flat panel speaker.

The Examiner further argues that, "[Azima] was cited only for disclosing a flat panel loudspeaker."³⁸ This is not the case. The Examiner relies upon filter/correlator 64 and column 5, lines 25-26 to allegedly teach the "measuring," step of claim 1.³⁹ The filter/correlator 64 is not found only in Azima, not Mäkivirta. Consequently, the Examiner's allegation that Azima is only relied upon to teach a flat panel speaker is incorrect. Azima

³⁷ See p. 6 of Appellant's Amendment filed Feb. 15, 2007.

³⁸ Final Office Action at 4.

³⁹ Id. at 2, 5.

is further relied upon to teach the "measuring," step of claim 1. As will be discussed in more detail below, even in combination, Azima and Mäkivirta does not teach or suggest any such step.⁴⁰

2. Even if combined, Azima and Mäkivirta fail to teach or suggest all features of claim 1.

While Azima arguably discloses measuring signal correction, the measured signal correction is applied only to the microphone use of the panel not loudspeaker use. Azima is silent about the details of the correction method performed by the filter/correlator (64) driven by a vibration transducer (63) during loudspeaker use of the panel (2). Moreover, even if details of the signal correction method were disclosed, Azima fails to teach how a signal is corrected and how that correction is applied to the input signal of the panel (2) when used as a loudspeaker. Therefore, Azima fails to teach or suggest, "emitting sound by the surface stimulated to oscillate mechanically by the oscillating coil," and "measuring the acoustic frequency response of this flat surface loudspeaker," as required by claim 1.

Turning to the teachings of Mäkivirta, although Mäkivirta implies that a frequency response is measured, Mäkivirta fails to teach or fairly suggest that such a frequency response is measured from a sound emitted from the flat panel loud speaker. Therefore, Mäkivirta also fails to teach or

⁴⁰ This statement assumes *arguendo* that such a combination could be made, which Appellant does not admit.

suggest "emitting sound by the surface stimulated to oscillate mechanically by the oscillating coil," and "measuring the acoustic frequency response of this flat surface loudspeaker," as required by claim 1.

Because neither reference teaches or suggests the above recited feature of claim 1, the combination of references does not render claim 1 obvious.⁴¹

C. A PERSON HAVING ORDINARY SKILL IN THE ART ("PHOSITA") WOULD HAVE NO REASON TO COMBINE AND WOULD HAVE BEEN LEAD AWAY FROM THE EXAMINER'S ALLEGED COMBINATION.

1. A PHOSITA would not have sufficient reason to believe that combining Azima and Mäkivirta would produce a superior output.

As previously argued during prosecution, in Mäkivirta, an FIR filter is designed such that the response is an inverse of the amplitude response of the loudspeaker system between selected frequencies. The wideband filter (4) is implemented in a digital signal processor programmed to implement a desired transfer function. The wideband filter (4) substantially covers the desired audio range and is a digital filter. Concisely, Mäkivirta refers to a sound reproduction system with a **conventional membrane-type loudspeaker** (i.e., sound radiating from a **point-like sound source**).

⁴¹ Again, this statement is made assuming *arguendo* such a combination could be made, which Appellant does not admit.

The conventional membrane-type loudspeaker is arranged in a loudspeaker cabinet such as the housing of a TV set. In this type of sound reproduction system, sound is corrected because the audio output of conventional membrane-loudspeakers is heavily influenced by its installation in a housing, for example, a cabinet, housing of a TV set or a housing of a mobile telephone.

Azima discloses a panel form combination loudspeaker/microphone for use in an interactive environment. The loudspeaker/microphone combination comprises a rectangular frame carrying a resilient suspension around its inner periphery supporting a distributed mode sound radiating panel. As shown in FIGS. 3 and 4 of Azima, a transducer (9) is mounted only and exclusively on (or in) the panel (9) at a predetermined location. The position of the predetermined location is calculated such that bending waves are launched into the panel (2). The bending waves cause the panel (2) to resonate and radiate an acoustic output.

Still referring to Azima, for use as a sound receiver or microphone the panel (2) includes a pair of vibration transducers (63) coupled in parallel. The pair of vibration transducers (63) drive a signal receiver and conditioner (65) connected to an output. Another vibration transducer (63) on the panel (2) is coupled to drive a filter/correlator (64). The output of the filter/correlator (64) is fed to the signal receiver and conditioner (65) for signal correction.

In determining that claim 1 would have been obvious at the time of the invention, the Examiner essentially argues one a PHOSITA would modify Mäkivirta's speaker to be a flat panel speaker because doing so would produce a superior speaker.⁴² As one can appreciate, however, the speakers in Mäkivirta and Azima are two distinctly different types of speakers. Therefore, a PHOSITA would not expect that modifying Mäkivirta to apply to a completely different speaker (i.e., the flat panel speaker of Azima) would produce a superior speaker. For this reason, a PHOSITA would have no plausible reason to combine Mäkivirta and Azima to arrive at the claimed invention.

2. A PHOSITA would not have combined Azima and Mäkivirta because Azima teaches away from doing so.

Furthermore, assuming *arguendo* a PHOSITA would have looked to Azima for the deficiencies of Mäkivirta, he/she would have been lead away from the present invention: Azima teaches to optimize the acoustic output by placing a transducer (9) on or in a panel at a predetermined location. Accordingly, when analyzing Azima a PHOSITA would recognize that acoustic output of a flat panel speaker is optimized based on where the transducer (9) is placed.

Moreover, according to Azima, sound-output is best if the position of the transducer (9) is calculated as described in U.S. patent applications

⁴² Id. at 3.

with serial nos. 09/011,773, 09/011,770 and 09/011,831. Thus, a PHOSITA would be lead to the teachings of these applications to optimize the acoustic output of a flat panel speaker, and away from Appellant's invention.

Furthermore, Azima mentions signal correction only in connection with the microphone use of the panel, but not for the loudspeaker use of the panel. Thus, while a PHOSITA may arguably be directed to utilizing signal correction in microphone use of the panel, a PHOSITA would also recognize the distinct differences between microphone use and loudspeaker use of a panel (e.g., input rather than output). These differences in mind, a PHOSITA would not be lead to believe that combining Mäkivirta and Azima would provide superior acoustic output of a flat panel loudspeaker, as the Examiner would have Appellant believe.

3. The Examiner has failed to provide the requisite rational explanation to support the obviousness rejection of claim 1.

In KSR Int'l Co. v. Teleflex Inc.,⁴³ the Supreme Court reaffirmed the proper framework for determining obviousness as set forth in Graham v. John Deere Co.^{44, 45} In light of this decision, the United States Patent and Trademark Office ("USPTO") recently published examination guidelines

⁴³ 127 S.Ct. 1727, 82 USPQ2d 1385 (2007).

⁴⁴ 383 U.S. 1, 148 U.S.P.Q. 459 (1966).

⁴⁵ 72 Fed. Reg. 195 57,526 (Oct. 10, 2007).

(hereinafter "Guidelines") for determining obviousness under 35 U.S.C. § 103.⁴⁶

According to the Guidelines, when making an obviousness rejection, the written record must include "findings and fact concerning the state of the art and the teachings of the references applied."⁴⁷ These findings of fact are, "necessary underpinnings to establish obviousness."⁴⁸ After articulating these factual findings, the Examiner must provide a rational explanation to support an obviousness rejection under 35 U.S.C. § 103.⁴⁹

The Examiner alleges that a PHOSITA would have modified the Mäkivirta's method by using a flat panel loudspeaker as the one-way loudspeaker, "to produce a more superior output over that of a conventional speaker."⁵⁰ Appellant respectfully submits, however, that this mere broad and conclusory statement does not constitute a "rational explanation," required to support the obviousness rejection.⁵¹ Absent any

⁴⁶ 72 Fed. Reg. 195 at 57,526.

⁴⁷ 72 Fed. Reg. 195 at 57,527.

⁴⁸ Id.

⁴⁹ Id. at 57,527 – 57,528 (An indispensable or key element to such a rational explanation is the clear articulation of the reasons why the claimed invention would have been obvious to one of ordinary skill at the time of the invention)

⁵⁰ Final Office Action at 6.

⁵¹ 72 Fed. Reg. 195 57526, 57527-57528 (Oct. 10, 2007) (An indispensable or key element to such a rational explanation is the *clear articulation* of the reasons why the claimed invention would have been obvious to one of ordinary skill at the time of the invention); *see, also*, *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 82 USPQ2d 1385 (2007) (*quoting In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) "[R]ejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.").

such rational explanation, the obviousness rejection of claim 1 over Mäkivirta and Azima cannot be sustained.

a. The Examiner has not satisfied any of the rationales outlined in the recently published USPTO Guidelines for determining obviousness under 35 U.S.C. § 103.

The Guidelines also provided a list of rationales supporting a conclusion of obviousness.⁵² In the following discussion, Appellant will show that none of these rationales sufficiently supports the Examiner's combination of Azima and Mäkivirta.

i. *Combining prior art elements according to known methods to yield predictable results.*

This rationale requires that all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods without no change in their respective functions. This rationale also requires a finding that the combination would have yielded nothing more than predictable results to one of ordinary skill in the art at the time of invention.⁵³

Appellant submits that the Examiner cannot rely upon this rationale to support his conclusion that claim 1 is obvious over Mäkivirta and Azima because, even assuming *arguendo* that all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective

⁵² See, generally, 72 Fed. Reg. 57,526.

⁵³ Id. at 57,529.

functions (which Appellant does not admit), the claimed combination would have yielded an unpredictable result to one of ordinary skill in the art at the time of invention. That is, namely, the ability to maintain sound quality of a flat surface loudspeaker, while lifting constraints on the shape and material usable as the sound-emitting surface. As discussed in Appellant's Specification, such a flat panel loudspeaker was unknown in the prior art prior to Appellant's invention.

For at least these reasons, Appellant submits that this rationale cannot support the Examiner's rejection of claim 1 based on the combination of Mäkivirta and Azima.

ii. Simple substitution of one known element for another to obtain predictable results.

This rationale requires that the substitution of one known element for another would have yielded predictable results to one of ordinary skill in the art at the time of the invention.⁵⁴

In combining Mäkivirta with Azima, the Examiner does appear to make a substitution. That is, namely, substituting the flat panel loudspeaker of Azima for the membrane-type loudspeaker of Mäkivirta. However, assuming *arguendo* that such a substitution could be made (which Applicants do not admit), such a substitution yields an unpredictable result; that is, the ability to maintain sound quality of a flat

⁵⁴ 72 Fed. Reg. at 57,530.

surface loudspeaker, while lifting constraints on the shape and material usable as the sound-emitting surface. Accordingly, Appellant submits that the Examiner cannot rely upon this rationale to support his conclusion that claim 1 is obvious over the combination of Mäkivirta and Azima.

iii. *Use of known techniques to improve similar devices (methods or products) in the same way.*

This rationale relates to a method of enhancing a particular class of devices, methods, or products that were made part of the ordinary capabilities of one skilled in the art based upon the teaching of such improvement in other situations.⁵⁵ Particularly, one of ordinary skill in the art would have been capable of applying this known method of enhancement to a "base" device, method, or product in the prior art and the results would have been predictable to one of ordinary skill in the art.⁵⁶

Appellant submits that the Examiner cannot rely upon this rationale to support his conclusion that claim 1 is obvious over the combination of Mäkivirta and Azima because the speakers in Mäkivirta and Azima are two distinctly different types of speakers, and the claimed combination of elements does produce unpredictable results. That is, the ability to maintain sound quality of a flat surface loudspeaker, while lifting constraints on the shape and material usable as the sound-emitting surface.

⁵⁵ 72 Fed. Reg. at 57,530.

⁵⁶ Id.

For at least these reasons, Appellant submits that the Examiner cannot rely upon this rationale to support the Examiner's rejection of claim 1 based on the combination of Mäkivirta and Azima.

iv. Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results.

This rationale requires identification of a particular known technique that is recognized as part of the ordinary capabilities of one skilled in the art, and a showing that one of ordinary skill in the art would have been capable of applying this known technique to a known device, method, or product that was ready for improvement and that the results would have been predictable to one of ordinary skill in the art.⁵⁷

As discussed above, method for operation of a flat surface loudspeaker of claim 1 alleviates constraints on shapes and materials usable for the sound-emitting surface of a flat surface loudspeaker, without any need to accept any reduction in sound quality, which was not a predictable result at the time of the invention. Therefore, Appellant submits that the Examiner cannot rely upon this rationale to support his conclusion that claim 1 is obvious over the combination of Mäkivirta and Azima because the result would have not been predictable to one of ordinary skill in the art.

⁵⁷ 72 Fed. Reg. at 57,531.

v. "Obvious to Try" – Choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

This rationale requires that a person of ordinary skill has good reason to pursue the known finite options within his or her technical grasp.⁵⁸ "If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense."⁵⁹

Appellant submits that the Examiner cannot rely upon this rationale to support his conclusion that claim 1 is obvious over the combination of Mäkivirta and Azima at least because the Examiner has failed to show a finite number of options from which one of ordinary skill in the art had to choose. A person of ordinary skill would have any number of ways to modify the membrane-type loudspeaker of Mäkivirta to produce a more superior output, none of which would obviously lead a PHOSITA to the method of claim 1.

For at least these reasons, Appellant submits that the Examiner cannot rely upon this "obvious to try" rationale to support the Examiner's rejection of rejection of claim 1 based on the combination of Mäkivirta and Azima.

⁵⁸ KSR, 127 S. Ct. at 1742, 82 USPQ2d at 1397.

⁵⁹ Id.

vi. Known work in one field of endeavor may prompt variations of it for use in either the same field of a different one based on design incentives or other market forces if the variations would have been predictable to one of ordinary skill in the art.

This rationale requires that design incentives or other market forces could have prompted one of ordinary skill in the art to vary the prior art in a predictable manner to result in the claimed invention.⁶⁰ An example implementation of this rationale is provided in Leapfrog Enterprises, Inc. v. Fisher-Price, Inc.⁶¹ that dealt with a learning device to help young children read phonetically. A claim directed to an interactive learning device comprised a housing including a plurality of switches, a sound production device, at least one depiction of a sequence of letters with each letter associated with a switch, and a reader to communicate the identity of the depiction to the processor.

The selection of a depicted letter activated an associated switch to communicate with the processor, which caused the sound production device to generate a signal corresponding to a sound associated with the selected letter. The court found the claimed invention obvious over two pieces of prior art - *Bevan*, showing an electro-mechanical toy for phonetic learning and the Super Speak & Read electronic reading toy (SSR) – and the knowledge of one of ordinary skill in the art.

⁶⁰ 72 Fed. Reg. at 57,533.

⁶¹ 485 F.3d 1157, 82 USPQ2d 1687 (Fed. Cir. 2007).

In Leapfrog, the court found no technological advance beyond the skill shown in SSR because SSR permits the electronic generation of a sound corresponding to a first letter of a word, and the combination of the electro-mechanical toy of *Bevan* with newer technology from SSR that is commonly available and understood in the art is simply a variation of these known children's toys. Combining *Bevan* with SSR in order to update *Bevan* using modern electronic components "in order to gain the commonly understood benefits of such adaptation, such as decreased size, increased reliability, simplified operation, and reduced cost" is obvious to one of ordinary skill.

Appellant submits that the Examiner cannot rely upon this rationale to support his conclusion that claim 1 is obvious over the combination of Mäkivirta and Azima because there is no predictable variation, but rather an infinite number of ways for a person of ordinary skill to produce a speaker having a more superior output. Thus, a person of ordinary skill would have a myriad of ways to modify the membrane speaker of Mäkivirta, other than the manner suggested by the Examiner.

vii. Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art references or to combine prior art teachings to arrive at the claimed invention

This rationale requires that, "a person of ordinary skill in the art would have been motivated to combine the prior art to achieve the claimed

invention and that there would have been a reasonable expectation of success."⁶² Courts view the teaching, suggestion, or motivation test as flexible and implicit reasons to combine the prior art are sufficient. Implicit reasons may be found "not only when a suggestion may be gleaned from the prior art as a whole, but when the 'improvement' is technologically independent and the combination of references results in a product that is more desirable, for example, because it is stronger, cheaper, cleaner, faster, lighter, smaller, more durable, or more efficient."⁶³

Appellant submits that the Examiner cannot rely upon this rationale to support his conclusion that claim 1 is obvious over Mäkivirta and Azima, because the suggestion is not present in the references, and the improvement is not technology independent. Moreover, the resultant combination results in an unpredictable result.

The Examiner refers Appellants to column 4, lines 61-62 of Azima arguing that a PHOSITA would modify the teachings of Mäkivirta such that the speaker was a flat panel speaker because such a modification would produce a more superior output.⁶⁴ This portion of Azima fails to teach or suggest that merely substituting the flat panel speaker of Azima would achieve such a result.

⁶² DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co., 464 F.3d 1356, 1360, 80 USPQ2d 1641, 1645 (Fed. Cir. 2006).

⁶³ Id. at 1368, 80 USPQ2d at 1651.

⁶⁴ Office Action at 6.

While Azima does boast that his invention provides, "superior stereo effect compared to conventional speakers," which advantage is not characterized by the fact that the speaker is a flat panel speaker, but instead by "a second transducer coupled to the radiator to produce a signal in response to resonance of the radiator due to incident acoustic energy."⁶⁵ In other words, Azima's alleged superior stereo effect results from the two transducers, but not by the mere fact that the speaker is a flat panel speaker. Therefore, the Examiner's reliance on Azima to conclude that a PHOSITA would modify the teachings of Mäkivirta such that the speaker was a flat panel speaker because such a modification would produce a more superior output is incorrect.

Moreover, as argued *supra*, the method of claim 1 provides the ability to maintain sound quality of a flat surface loudspeaker, while lifting the constraints on the shape and material usable as the sound-emitting surface, which would not have been expected by a PHOSITA at the time of the invention.

For at least the foregoing reasons, claim 1 is not rendered obvious by Mäkivirta and/or Azima, taken singly or in combination. The arguments set forth *infra* apply equally to independent claim 4, and thus, claim 4 is also patentable over Azima and Mäkivirta. Dependent claims 2-6, 8 and 10

⁶⁵ Azima at 1:64-1:66.

are patentable over Mäkivirta and Azima at least by virtue of their dependency from claims 1 or 4.

Rejection of claims 7, 9, 11 and 12 over Mäkivirta, Azima and Smith.

For reasons set forth above, claims 1-6, 8 and 10 are not obvious over Mäkivirta and Azima, taken singly or in combination. The Examiner further relies upon Smith to teach the features of claims 7, 9, 11 and 12, which are absent from Mäkivirta and Azima. However, from even a cursory review, one can appreciate that Smith fails to make up for the deficiencies, nor provide reason to combine Azima and Mäkivirta, and thus, does not further the rejection of claims 1 or 4. Consequently, claims 7, 9, 11 and 12 are patentable over Azima, Mäkivirta and/or Smith.

VIII. CLAIMS APPENDIX

An Appendix containing a copy of the claims involved in this Appeal is attached.

IX. EVIDENCE APPENDIX

None. However, in accordance with United States Patent and Trademark Office Practice, attached hereto is a blank Appendix indicating the same.

X. RELATED PROCEEDINGS APPENDIX

None. However, in accordance with United States Patent and Trademark Office Practice, attached hereto is a blank Appendix indicating the same.

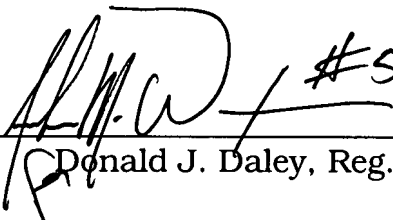
XI. CONCLUSION:

In light of the foregoing arguments, Appellant respectfully requests the Board to reverse the Examiner's rejection of claims 1-12.

The Commissioner is authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

HARNESS, DICKY & PIERCE, PLC

By  #56,007
Donald J. Daley, Reg. No. 34,313

DJD/AMW

P.O. Box 8910
Reston, VA 20195
(703) 668-8000

VIII. CLAIMS APPENDIX

Claims on Appeal:

1. A method for operation of a flat surface loudspeaker, in which at least one oscillating coil is mounted on a surface in the form of a plate having predetermined material characteristics, comprising:

stimulating at least one coil to oscillate electrically by a sound source;

emitting sound by the surface stimulated to oscillate mechanically by the oscillating coil; in a measuring mode,

measuring the acoustic frequency response of this flat surface loudspeaker;

determining a frequency curve based on the measured acoustic frequency response;

determining an inverse frequency curve to the frequency curve;

simulating the inverse frequency curve in a filter device as a transfer function of the filter device; and

in an operating mode, compensating for the frequency response of the flat surface loudspeaker by the filter device, which is connected between the sound source and the flat surface loudspeaker based upon the transfer function.

2. The method as claimed in claim 1, wherein the transfer function of the filter device is simulated by digital filters.

3. The method as claimed in claim 2, wherein the transfer function is formed by FIR (Finite Impulse Response) filters, whose filter coefficients are derived from the inverse frequency curve.

4. A flat surface loudspeaker device comprising:
a flat surface loudspeaker, the flat surface loudspeaker including at least one oscillating coil, mounted on a surface in the form of a plate having predetermined material characteristics which, when stimulated by electrical sound signals, causes this surface to oscillate in order to emit sound; and

a filter device for the sound signals, connected upstream of the at least one oscillating coil, wherein a transfer function of the filter device is the inverse of a frequency response of the flat surface loudspeaker.

5. The flat surface loudspeaker as claimed in claim 4, wherein the filter device is in the form of a digital filter.

6. The flat surface loudspeaker as claimed in claim 5, wherein the filter device is formed by FIR (Finite Impulse Response) filters.

7. The flat surface loudspeaker as claimed in claim 5, wherein the filter device includes a sample and hold element as the input element, connected via an analogue-to-digital converter to the digital filter, whose output is connected to a digital-to-analogue converter.

8. The flat surface loudspeaker as claimed in claim 5, wherein the filter device is equipped with a digital signal processor.

9. The flat surface loudspeaker as claimed in claim 6, wherein the filter device includes a sample and hold element as the input element, connected via an analogue-to-digital converter to the digital filter, whose output is connected to a digital-to-analogue converter.

10. The flat surface loudspeaker as claimed in claim 6, wherein the filter device is equipped with a digital signal processor.

11. The flat surface loudspeaker as claimed in claim 7, wherein the filter device is equipped with a digital signal processor.

12. The flat surface loudspeaker as claimed in claim 9, wherein the filter device is equipped with a digital signal processor.

APPELLANT'S BRIEF ON APPEAL UNDER 37 C.F.R. §41.37
U.S. Application No. 10/030,870
Atty Docket No. 32860-000181/US

IX. EVIDENCE APPENDIX

None.

APPELLANT'S BRIEF ON APPEAL UNDER 37 C.F.R. §41.37
U.S. Application No. 10/030,870
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X. RELATED PROCEEDINGS APPENDIX

None.